

611 Fed.Appx. 969  
United States Court of Appeals,  
Federal Circuit.

In re [MAGNA ELECTRONICS, INC.](#), Appellant.  
In re [Magna Electronics, Inc.](#), Appellant.

Nos. 2014–1798, 2014–1801.

|  
May 7, 2015.

### Synopsis

**Background:** The Patent and Trademark Office (PTO), Patent Trial and Appeal Board, [2014 WL 2360424](#) and [2014 WL 2466134](#), affirmed examiners' rejection of claims as obvious in patents that were directed to vehicular rearview vision systems comprising image capture device and display system. Assignee appealed.

**Holdings:** The Court of Appeals held that:

[1] use of CMOS camera in prior art vehicular vision systems was obvious, and

[2] use of prior art graphic overlay with prior art vehicular vision system was obvious.

Affirmed.

West Headnotes (3)

#### [1] Patents

🔑 [Automobiles and vehicles](#)

Use of camera with complementary metal-oxide-semiconductor (CMOS), i.e., small amount of memory on computer motherboard that stored basic input-output system (BIOS) settings, in prior art vehicular vision systems was obvious, and thus claim in patent directed to vehicular rearview vision system comprising image capture device was invalid, since substitution of prior art charge-coupled device (CCD) camera with CMOS camera was but mere substitution of one element for another known in field

that achieved predictable result; high costs and other companies' purported preferences that led to assignee's commercial success did not raise doubt that CMOS camera-based automotive vision system could be manufactured. [35 U.S.C.A. § 103\(a\)](#).

[Cases that cite this headnote](#)

#### [2] Patents

🔑 [Automobiles and vehicles](#)

Use of prior art graphic overlay with prior art vehicular vision system was obvious, and thus patent that was directed to vehicular rearview vision system claiming regularly spaced horizontal lines that showed relative position of objects behind vehicle to driver was invalid, since prior art conceived of providing numerical indicators, even if patent had required distance determination, and person of ordinary skill would have been motivated to apply descending scale in prior art, perhaps inverted for design purposes, to graphic overlay of patent, patent's shortened horizontal lines provided same information and functionality as prior art's long horizontal lines, and assignee did not establish nexus between secondary considerations of nonobviousness and claimed invention. [35 U.S.C.A. § 103\(a\)](#).

[Cases that cite this headnote](#)

#### [3] Patents

🔑 [In general; utility](#)

[US Patent 5,949,331](#), [US Patent 6,222,447](#).  
Invalid in Part.

[Cases that cite this headnote](#)

\***969** Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. 90/011,478, 90/011,477.

#### Attorneys and Law Firms

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\*970 Before PROST, Chief Judge, LOURIE and CHEN, Circuit Judges.

## Opinion

PER CURIAM.

Magna Electronics, Inc. (“Magna”) appeals from two related *ex parte* reexamination decisions of the United States Patent and Trademark Office (“PTO”), Patent Trial and Appeal Board (“Board”). In the first, Magna appeals from the Board’s decision affirming the examiner’s rejection of claims 45 and 107 of U.S. Patent 6,222,447 (“the ‘447 patent”) as obvious under 35 U.S.C. § 103(a) (2006).<sup>1</sup> *Ex parte Magna Elecs., Inc.*, No. 2013–004164, 2014 WL 2360424 (P.T.A.B. May 28, 2014) (“*Decision I*”). In the second, Magna appeals from the Board’s decision affirming the examiner’s rejection of claims 3 and 5–9 of U.S. Patent 5,949,331 (“the ‘331 patent”) as obvious under § 103(a). *Ex parte Magna Elecs., Inc.*, No. 2013–006429, 2014 WL 2466134 (P.T.A.B. May 28, 2014) (“*Decision II*”). Because the Board did not err, we affirm.

## BACKGROUND

Magna is the assignee of the ‘447 and ‘331 patents, which are directed to vehicular rearview vision systems comprising an image capture device and a display system. Notably, the ‘447 patent describes a CMOS imaging array as the image capture device, and the ‘331 patent describes a display system that enhances images by using a graphic overlay of horizontal lines to indicate distance.

### A

Claim 45 is representative of the two claims at issue in the ‘447 patent and reads as follows:

45. A rearview vision system for a vehicle having a gear actuator, comprising:

an image capture device mounted at the rear of the vehicle and having a field of view directed rearwardly of the vehicle, wherein said image capture device

comprises a pixelated imaging array and wherein said pixelated array comprises a CMOS imaging array;

a display system viewable by a driver of the vehicle which displays a rearward image output of said image capture device;

a graphic overlayer superimposed on said rearward image when the gear actuator of the vehicle selects a reverse gear; and

wherein said graphic overlayer is disabled when the gear actuator of the vehicle is not in reverse gear.

‘447 patent col. 14 ll. 31–44, col. 15 ll. 12–15.

In February 2011, a third party requested a second *ex parte* reexamination of several claims of the ‘447 patent, which the PTO granted. In a Final Office Action, the examiner rejected most of the challenged claims. In particular, the examiner rejected claims 45 and 107 as obvious over a combination of Japanese Patent Application No. 64–14700 (“JP #700”), Japanese Patent Application No. 60–79889 (“JP #889”), and Wang et al., *CMOS Video Cameras*, IEEE 100–03 (1991) (“Wang”). Magna initially appealed the entire rejection to the Board; however, in its reply brief, Magna withdrew its appeal without prejudice as to all claims except claims 45 and 107.

On appeal, the Board affirmed the examiner’s rejection of claims 45 and 107, \*971 finding that it would have been obvious to combine the vehicular vision systems of JP ‘700 and JP ‘889 with the CMOS camera disclosed in Wang. *Decision I* at \*6. First, the Board found that Wang generally teaches the use of CMOS cameras in “smart vision systems,” which necessarily includes vehicular vision systems. *Id.* at \*2. Next, the Board found that replacing the CCD camera of JP ‘700 and JP ‘889 with the CMOS camera of Wang would have been “mere substitution of one element for another known in the field” and “would have achieved the predictable result of reducing the size, cost, and power consumption” of CCD-based systems. *Id.* In so doing, the Board rejected Magna’s proffered expert testimony, finding it biased, unsupported, and contrary to the express teachings of Wang. *Id.* at \*3. Last, the Board found that Magna failed to provide adequate evidence of secondary considerations to rebut the otherwise strong *prima facie* case of obviousness. *Id.* at \*4–6. According to the Board, Magna failed to show, *inter alia*, (1) a nexus between the alleged commercial success and the claimed invention; (2) any expert skepticism doubting

whether CMOS camera-based vehicular vision systems could be manufactured; and (3) any unexpected results. *Id.*

## B

Claim 3 is representative of the claims at issue in the '331 patent and reads as follows:

3. A vehicular rearview vision system, comprising:

at least one image capture device positioned on the vehicle and adapted to capturing images of objects; a display system which displays an image which comprises a rearward facing view of objects captured by said at least one image capture device;

wherein said display system enhances the displayed image by including an image enhancement comprising a visual prompt perspectively related to objects in the image displayed and which visually informs the driver of what is occurring in the area surrounding the vehicle including relative position of objects behind the vehicle; and

wherein said image enhancement comprises a graphic overlay superimposed on the displayed image indicating distances of objects from the vehicle and wherein said graphic overlay comprises at least one horizontal mark superimposed on the displayed image.

'331 patent col. 12 l. 59–col. 13 l. 9. Claim 5, in addition to reciting the system of claim 3, further requires “wherein said at least one horizontal mark comprises a plurality of short horizontal lines superimposed on the image at regular rearward intervals.” *Id.* col. 13 ll. 13–16. Claims 6–9 further depend from claim 5.

In February 2011, a third party similarly requested a second *ex parte* reexamination of several claims of the '331 patent, which the PTO granted. In a Final Office Action, the examiner rejected all of the challenged claims. Notably, the examiner rejected claims 3 and 5–9 as obvious over a combination of JP '700 and JP '889. Magna initially appealed the entire rejection to the Board; however, in its reply brief, Magna withdrew its appeal without prejudice as to all claims except claims 3 and 5–9.

On appeal, the Board affirmed the examiner's rejection of claims 3 and 5–9, finding that it would have been obvious

to combine the graphic overlay of JP '889 with the vision system of JP '700, *Decision II* at \*5. First, the Board noted that the claims do not require a distance measurement; they only require “a display that indicates distance from objects in some \*972 manner.” *Id.* at \*2 (referring to '331 patent col. 10 ll. 56–63). The Board then found that JP '889 “teaches horizontal lines” that “indicate [ ] distances of objects from a vehicle by virtue of being superimposed at regular, rearward intervals onto an image taken by a rear-facing camera,” as required by the claims. *Id.* at \*3. Even if the claims in fact require a distance measurement, the Board noted, JP '889 also “contains markings that indicate whether an object is closer to the vehicle (50) or farther from the vehicle (200).” *Id.* The Board thus rejected as unpersuasive Magna's contrary expert testimony. Next, the Board found that claim 5's “short horizontal lines” were but a design choice and provide the same functionality as the horizontal lines disclosed in JP '889. *Id.* at \*4. Last, the Board found that Magna failed to provide adequate evidence of secondary considerations of nonobviousness. *Id.* at \*4–5.

Magna timely appealed from both decisions, and we have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

## DISCUSSION

We review the Board's legal conclusions *de novo*, *In re Elsner*, 381 F.3d 1125, 1127 (Fed.Cir.2004), and the Board's factual findings underlying those determinations for substantial evidence, *In re Gartside*, 203 F.3d 1305, 1316 (Fed.Cir.2000). “Substantial evidence ... means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 217, 59 S.Ct. 206, 83 L.Ed. 126 (1938). Obviousness is a question of law based on underlying factual findings, *In re Baxter*, 678 F.3d 1357, 1361 (Fed.Cir.2012), such as what a reference teaches and “[s]uch secondary considerations as commercial success, long felt but unsolved needs, [and] failure of others,” *Graham v. John Deere Co.*, 383 U.S. 1, 17, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966).

## A

[1] With respect to the '447 patent, Magna argues that the PTO did not establish a *prima facie* case of obviousness because Wang does not teach, suggest, or motivate the use of CMOS cameras in vehicular vision systems. Instead, Magna

contends, Wang teaches away from such use because CMOS imager technology “w[as viewed] to be insensitive to low light conditions (and thus not particularly suitable for use as a rear backup camera at night), to have inferior image quality and to be difficult and costly to make.” ‘447 Appellant’s Br. 21. Magna further argues that it provided strong evidence of nonobviousness, such as commercial success, long felt need and failure of others, skepticism of experts, unexpected results, copying, and licensing. *Id.* at 37–58.

The PTO responds that each of the Board’s findings is supported by substantial evidence, and that Magna failed to provide adequate evidence of secondary considerations of nonobviousness. We agree, and therefore affirm the Board’s conclusion that claims 45 and 107 would have been obvious over JP ‘700, JP ‘889, and Wang.

As an initial matter, substantial evidence supports the Board’s finding that Wang teaches the use of CMOS cameras in “smart vision systems.” ‘447 Joint Appendix (“#447 J.A.”) 297 (“We introduce a new capability that extends the CMOS ASIC marketplace in[to] a sector of ... image sensing and processing, covering applications from electronic cameras to ‘smart’ vision systems.”). It was not error for the Board to further find that vehicular rearview vision systems, such as those disclosed in JP ‘700 and JP ‘889, are such “smart vision systems.” *Decision I* at \*2. \*973 Nonetheless, an explicit teaching, suggestion, or motivation is not necessary to support a conclusion of obviousness. *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 415–16, 127 S.Ct. 1727, 167 L.Ed.2d 705 (2007). Obviousness is a flexible inquiry, and we are tasked with determining whether a claimed improvement “is more than the predictable use of prior art elements according to their established functions.” *Id.* at 417, 127 S.Ct. 1727.

To that end, replacing the CCD camera of JP ‘700 and JP ‘889 with a CMOS camera was but “the mere substitution of one element for another known in the field” that “achieved [a] predictable result.” *Decision I* at \*2 (referring to *KSR*, 550 U.S. at 415–16, 127 S.Ct. 1727). As the Board found, Wang highlights several weaknesses of CCD technology, namely, that it appears “cumbersome, power-hungry and expensive.” *Id.*; see also ‘447 J.A. 297. Wang then notes that “high quality sensors” can instead be “implemented entirely” using CMOS technology to mitigate those shortcomings. *Id.* The claimed improvement of replacing the CCD cameras of JP ‘700 and JP ‘889 with the CMOS camera of Wang is thus nothing more “than the predictable use of prior art elements.” *KSR*, 550 U.S.

at 417, 127 S.Ct. 1727. We find Magna’s arguments to the contrary unpersuasive.

Substantial evidence also supports the Board’s finding that Magna lacks sufficient evidence to show nonobviousness. With respect to Magna’s commercial success argument, for example, the Board correctly found that Magna fails to relate its alleged 35% market share in the vehicular vision system industry to its use of a CMOS camera. *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311–12 (Fed.Cir.2006) (noting that a nexus must exist between a product’s commercial success and the claimed invention); see also ‘447 Appellant’s Br. 53 (generally stating: “that so many vehicles across so many automakers are at dealerships today with rear vision systems and graphic overlay and CMOS imaging devices and other features as claimed is clear and convincing evidence of commercial success”).

Nor can Magna substantiate its claim of skepticism of experts. As we have noted, such arguments often require a showing of technical infeasibility or manufacturing uncertainty. See *Arkie Lures, Inc. v. Gene Larew Tackle, Inc.*, 119 F.3d 953, 958 (Fed.Cir.1997) (finding that “violent explosions” that render manufacturing “unsafe” support such an argument). Yet here, Magna relies only on high costs and other companies’ purported preferences. Such evidence “does not raise doubt that a CMOS camera-based automotive vision system can be manufactured.” *Decision I* at \*5; see *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1013 (Fed.Cir.1983) (“[T]hat the two disclosed apparatus would not be combined by businessmen for economic reasons is not the same as saying that it could not be done because skilled persons in the art felt that there was some technological incompatibility that prevented their combinations.”).

We therefore hold that the Board correctly concluded that it would have been obvious to use a CMOS camera in the vehicular vision systems of JP ‘700 and JP ‘889.

## B

[2] With respect to the ‘331 patent, Magna argues that the PTO did not establish a *prima facie* case because the JP ‘889 reference teaches using horizontal lines to indicate a *positional relationship*, whereas the claimed invention uses horizontal lines to generate a specific *distance measurement*. And, Magna contends, JP #889’s descending scale cannot indicate distance. \*974 With respect to claim 5, Magna

argues that the short horizontal lines are not just a design choice. Last, Magna submits that it provided strong evidence of nonobviousness.

The PTO responds that the Board's findings are supported by substantial evidence, and that Magna's evidence of secondary considerations of nonobviousness lacks a nexus to the claimed invention. We agree, and therefore affirm the Board's conclusion that claims 3 and 5–9 would have been obvious over JP '700 and JP '889.

Substantial evidence supports the Board's finding that JP '889 teaches the graphic overlay claimed in the '331 patent, *i.e.*, regularly spaced horizontal lines that show the driver the relative position of objects behind the vehicle. '331 Joint Appendix (“#331 J.A.”) 262–65. We find Magna's argument to the contrary unpersuasive for two reasons. First, Magna's argument assumes that the '331 patent requires a distance determination. Yet as the Board correctly found, the claims only require “indicating distances.” '331 patent col. 10 ll. 56–63. JP '889 does not need to teach quantitative measurements to render the graphic overlay of the '331 patent obvious. Even so, as the Board found, JP '889 conceives of providing numerical indicators. *Decision II* at \*3; *see also* '331 J.A. 261 (fig.2). The fact that the numbers lie on a descending scale does not negate the fact that a person of ordinary skill would have been motivated to apply that scale, perhaps inverted for design purposes, to the graphic overlay of the '331 patent.

Second, Magna's argument emphasizes an alleged distinction between a positional relationship and an indication of a distance. Even assuming *arguendo* that such a distinction exists, the '331 patent essentially treats the two terms coextensively: “[h]orizontal grid markings on the display may be provided to *indicate distances* behind the vehicle at particular markings. Such a grid would allow the driver to judge *the relative position* of vehicles behind the equipped vehicle.” *Id.* col. 10 ll. 56–59 (emphases added); *see also id.* col. 1 ll. 60–66. All that the '331 patent requires is a graphic overlay to indicate the distance, *i.e.*, relative position, of objects behind a vehicle. And, as the Board found, that is precisely what JP '889 teaches.

#### Footnotes

- 1 Because the applications of the '447 and '331 patents were filed before March 16, 2013, the pre-Leahy-Smith America Invents Act version of § 103 applies. *See Pub L. No. 112–29, 125 Stat. 284 (2011).*

Magna's remaining arguments are similarly unpersuasive. As the Board found, JP '889 teaches horizontal lines spaced at regular intervals, and shortening the length of the horizontal lines “would be an obvious design choice within the skill of the art.” *In re Kuhle*, 526 F.2d 553, 555 (CCPA 1975). In this context, short horizontal lines provide the same information and functionality as long horizontal lines, and cannot be used as a distinguishing factor to render the claims nonobvious. Furthermore, as the Board found, Magna failed to provide adequate evidence of nonobviousness. Much like in the '447 appeal, Magna fails to establish a nexus between the secondary considerations of nonobviousness and the claimed invention, *see, e.g., In re Kao*, 639 F.3d 1057, 1069–70 (Fed.Cir.2011) (noting that it is difficult to prove nexus without a showing that the claimed improvement causes success that the prior art would not); *In re Huang*, 100 F.3d 135, 140 (Fed.Cir.1995) (holding that the inventor's opinion as to the purchaser's reason for buying the product is insufficient to demonstrate a nexus), and thus cannot rebut the *prima facie* showing.

We therefore hold that the Board correctly concluded that it would have been obvious to use the graphic overlay of JP '889 with the vehicular vision system of JP '700.

#### \*975 CONCLUSION

We have considered Magna's remaining arguments, but find them unpersuasive. For the foregoing reasons, the Board's decisions affirming the rejections of claims 45 and 107 of the '447 patent and claims 3 and 5–9 of the '331 patent are affirmed.

#### AFFIRMED

#### All Citations

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